

Notice of Allowability

Application No.

10/043,801

Examiner

Majid A Banankhah

Applicant(s)

DAYNES ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 01/10/02.
2. ☒ The allowed claim(s) is/are 1-52.
3. ☒ The drawings filed on 10 January 2002 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
- * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____



MAJID BANANKHAH
PRIMARY EXAMINER

Allowable Subject Matter

1. Claims 1-52 are allowed.

2. The following is an examiner's statement of reasons for allowance:

The prior art of record failed a method that enables native code, dynamically compiled from platform-independent code by one task of a multitasking virtual machine, to be used by other tasks. The sharing of the dynamically compiled code reduces both the amount of dynamic compilation performed by, and the memory footprint of each task. The dynamic compiler can produce two types of native code that can be shared among tasks: task re-entrant code, and class initialization dependent (CID) code. Task re-entrant code is guaranteed to be executable by any task, irrespective of the classes already initialized by the task. In order to achieve this, the method of the invention allow the dynamic compiler generates task re-entrant class initialization barriers anywhere in the code where a class might be used for the first time by a task. When producing CID code, the compiler assumes that a task will execute this code only after the task has initialized all the classes from an initialized set associated with the code.

In one embodiment of the present invention, the system maintains only one version of dynamically compiled native code per method of a class, which may be either task re-entrant or CID. Upon invocation of a class method without native code, the methods platform-independent code is interpreted, irrespective of the task invoking the method.

After a threshold number of interpreted invocations, the dynamic compiler is invoked to build CID native code for the method. Upon invocation of a class method set with CID code, the native code is executed only for those tasks that have already initialized all the classes specified

in the initialized set of the native code; for all other tasks, the method's platform-independent code is interpreted. If a task fails to initialize all the classes of the initialized set of the CID code of a method after a threshold of the number of invocations of that method, a task re-entrant version of the native code of the method is produced to replace its CID code. Upon invocation of a class method set with task re-entrant native code, the native code is executed, irrespective of the task invoking the method.

In one embodiment of the present invention, the system maintains two versions of dynamically compiled native code per method of a class, one that is task re-entrant, and the other that is class initialization dependent. Upon invocation of a method without native code, the method's platform-independent code is interpreted, irrespective of the task invoking the method. After a threshold number of interpreted invocations, the dynamic compiler is invoked to build CID native code for the method. Upon invocation of a class method set with CID code, the native code is executed only for those tasks that have already initialized all the classes specified in the initialized set of native code; for all other tasks, if the method also includes task re-entrant native code, this one is executed. Otherwise, the method's platform-independent code is interpreted. After a threshold of the number of invocations of a method without task re-entrant native code but with CID code, if a task fails to initialize all the classes of the initialized set of the CID code, task re-entrant native code is produced for the method and added to it. The CID native code of a method that also has task re-entrant native code is replaced with another CID produced with a different initialized set after a threshold number of invocations to the method that did not result in executing the CID native code. After a threshold number of such replacement of CID code, the

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method is set with task re-entrant native code

The cited prior art of record lacks sufficient scope and implementation detailed to fairly teach or suggest the combination of limitations claimed in the instant invention when the claimed inventions are interpreted in light of the Applicant's specification.

3. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee.

Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."


4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Majid A. Banankhah** whose telephone number is (571) 272-3770. The examiner can normally be reached on Monday – Thursday, 7:00 AM – 3:30 PM.

Any inquiry of a general nature or relating to the status of this application should be directed to the **TC 2100 Group receptionist: 571-272-2100**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on (571) 272-3756.

Information regarding the status of an application may be obtained from the patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).

Majid Banankhah
4/4/05



MAJID BANANKHAH
PRIMARY EXAMINER